

Applicant : Miller et al.  
Serial No. : 10/633,276  
Filed : July 31, 2003  
Page : 2 of 11

Attorney's Docket No.: 05542-528001 / 008252/CMP

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) An apparatus for chemical mechanical polishing, comprising:  
  
a platen to support a polishing surface; and  
  
an eddy current monitoring system to generate an eddy current signal, the eddy current monitoring system ~~comprising~~ comprising an elongated core positioned at least partially in the platen, the elongated core including one or more protrusions and having a length and a width, the length being parallel to the polishing surface and longer than the width, at least one of the one or more protrusions having a same extent as the length.
2. (Currently Amended) The apparatus of claim 1, wherein the elongated core comprises a back portion and the one or more protrusions extending extend perpendicularly from the back portion towards the polishing surface.
3. (Original) The apparatus of claim 2, further including a coil coupled with at least one of the one or more protrusions.
4. (Original) The apparatus of claim 3, wherein the coil comprises woven wire.

Applicant : Miller et al.  
Serial No. : 10/633,276  
Filed : July 31, 2003  
Page : 3 of 11

Attorney's Docket No.: 05542-528001 / 008252/CMP

5. (Original) The apparatus of claim 3, wherein the one or more protrusions include a first protrusion and a second protrusion, and wherein the coil is coupled with the first protrusion and the second protrusion in a figure eight configuration.
6. (Original) The apparatus of claim 3, further including another coil coupled with the back portion.
7. (Original) The apparatus of claim 1, wherein the length is at least twice the width.
8. (Original) The apparatus of claim 1, wherein the length is between about five millimeters and about ten centimeters.
9. (Original) The apparatus of claim 1, wherein the width is less than about a centimeter.
10. (Original) The apparatus of claim 1, wherein the eddy current monitoring system further includes a shield positioned proximate an outer surface of the elongated core.
11. (Original) The apparatus of claim 10, wherein the shield includes a gap.
12. (Currently Amended) An eddy current sensing system, comprising:  
an elongated core including a back portion and one or more protrusions extending away from the back portion along a first axis, the elongated core having a length and a width, the length being orthogonal to the first axis and longer than the width, at least one of the one or more protrusions having a same extent as the length;

Applicant : Miller et al.  
Serial No. : 10/633,276  
Filed : July 31, 2003  
Page : 4 of 11

Attorney's Docket No.: 05542-528001 / 008252/CMP

a housing having mounting features shaped and configured to position the elongated core in a recess of a platen;

a coil wound around a portion of the elongated core;

a drive system to generate a current in the coil; and

a sense system to derive a characteristic of a conductive region based on eddy currents generated in the conductive region.

13. (Currently Amended) The system of claim 12, wherein the ~~elongated core~~ comprises a back portion and one or more protrusions ~~extending~~ extend perpendicularly from the back portion towards the ~~a~~ polishing surface

14. (Original) The system of claim 13, further comprising a coil coupled with at least one of the one or more protrusions.

15. (Original) The system of claim 12, wherein the elongated core comprises a ferrite material.

16. (Original) The system of claim 15, wherein the ferrite material is chosen from the group consisting of a MnZn ferrite material and a NiZn ferrite material.

17. (Original) The system of claim 12, wherein the elongated core is coated with a material.

18. (Original) The system of claim 17, wherein the material comprises parylene.

Applicant : Miller et al.  
Serial No. : 10/633,276  
Filed : July 31, 2003  
Page : 5 of 11

Attorney's Docket No.: 05542-528001 / 008252/CMP

19. (Currently Amended) The system of claim 17, further comprising:  
the platen, ~~including wherein the platen includes~~ complementary mounting features to receive the housing; and  
a polishing pad ~~having that includes a polishing surface and that is~~ mounted to the platen, such that, when the mounting features of the housing ~~engage-are engaged with the~~ complementary mounting features of the ~~patent platen~~, a top surface of one of the one or more protrusions of the elongated core is positioned about two millimeters or less from the polishing surface of the pad.

20. (Original) The system of claim 19, wherein the top surface is positioned between about one millimeter and about two millimeters from the polishing surface.

21. (Original) The system of claim 19, wherein the elongated core has a generally U-shaped cross section.

22. (Original) The system of claim 19, wherein the elongated core has a generally E-shaped cross section.

23 - 53. (Canceled)

54. (New) The apparatus of claim 1, wherein the polishing surface has a circular shape, and the length of the elongated core is parallel to a radius of the polishing surface.

55. (New) The apparatus of claim 54 wherein the width of the elongated core is perpendicular to the radius of the polishing surface.

Applicant : Miller et al.  
Serial No. : 10/633,276  
Filed : July 31, 2003  
Page : 6 of 11

Attorney's Docket No.: 05542-528001 / 008252/CMP

56. (New) The apparatus of claim 12, wherein the platen has a circular shape, and the length of the elongated core is parallel to a radius of the platen.

57. (New) The apparatus of claim 56 wherein the width of the elongated core is perpendicular to the radius of the platen.

58. (New) An apparatus for chemical mechanical polishing, comprising:  
a platen having a top surface to support a polishing surface; and  
an eddy current monitoring system to generate an eddy current signal, the eddy current monitoring system including an elongated core positioned at least partially in the platen, the elongated core having a plurality of prongs extending in parallel along a first axis parallel to the top surface and spaced apart from each other along a second axis parallel to the top surface and perpendicular to the first axis, the core having a length along the first axis and a width along the second axis, the length being longer than the width.

59. (New) The apparatus of claim 58, wherein the platen is rotatable about an axis of rotation, and the first axis is substantially parallel to a radius perpendicular to and extending from the axis of rotation.